shifting arm means pivotally moveable between alternate shifting positions by shoulder means carried by said drive means for shifting said carrier between said alternately engageable positions; and

cam means on said carrier, and follower means slideably engaging said cam means for biasing and retaining said carrier in a selected one of said alternately engageable positions.

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Claim ~~77~~. The sprinkler unit of Claim ~~76~~ wherein said cam means comprises a cam lobe and said follower means engages said lobe on opposite sides thereof for biasing and retaining said carrier in a selected one of said alternately engageable positions.

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Claim ~~78~~. The sprinkler of Claim ~~77~~ wherein said spring biased follower means comprises a generally L-shaped leaf spring.

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Claim ~~79~~. The sprinkler of Claim ~~78~~ wherein said cam lobe is on said carrier and said spring biased follower means is mounted on adjacent housing structure.

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Claim ~~80~~. The sprinkler of Claim ~~79~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

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Claim ~~81~~. The sprinkler of Claim ~~77~~ wherein said cam lobe is on said carrier and said spring biased follower means is mounted on adjacent housing structure.

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Claim ~~82~~. The sprinkler of Claim ~~81~~ wherein:

drive means comprises a drive gear driven by a drive motor and mounted for rotation about a second axis spaced from said first axis;

said carrier is mounted for pivotal movement about said second axis; and

said shifting arm means is mounted for pivotal movement about said first axis.

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Claim ~~83~~. The sprinkler unit of Claim ~~82~~ wherein:

said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through lost motion means comprising shoulder means on the opposite side of said first axis from said second axis.

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Claim 84. The sprinkler of Claim 77 wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

Claim 85. The sprinkler of Claim 76 wherein:
drive means comprises a drive gear driven by a drive motor and mounted for rotation about a second axis spaced from said first axis;
said carrier is mounted for pivotal movement about said second axis; and
said shifting arm means is mounted for pivotal movement about said first axis.

Claim 86. The sprinkler unit of Claim 76 wherein:
said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through lost motion means comprising shoulder means on the opposite side of said first axis from said second axis.

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Claim ~~87~~. An oscillating sprinkler unit, comprising:

a sprinkler head mounted for rotation about a first axis;

a drive motor;

a reversible gear train for drivingly connecting said drive motor to said sprinkler head for driving said sprinkler head in alternate directions, comprising a final drive gear connected to said sprinkler head shiftable drive means comprising a carrier and alternately operable terminal gear means on said carrier shiftable with said carrier to alternately engageable positions with said final drive gear for driving said sprinkler head in alternate directions;

shifting arm means pivotally mounted adjacent said carrier and moveable between alternate shifting positions by engagement with shoulder means carried by said gear train, and lost motion means for connecting said shifting arm means with said carrier for shifting said carrier between said alternately engageable positions upon movement of said shifting arm means between said alternate shifting positions; and

cam means on said carrier slideably engageable by adjacent biasing follower means for biasing and maintaining said carrier in a selected one of said alternately engageable positions until shifted therefrom by said shifting arm means.

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Claim 76 ~~88~~. The sprinkler unit of Claim 75 ~~87~~ wherein said cam means comprises a cam lobe and said adjacent biasing follower means comprises spring biased follower means engaging said lobe on opposite sides thereof.

Claim 77 ~~89~~. The sprinkler of Claim 76 ~~88~~ wherein said spring biased follower means comprises a generally L-shaped leaf spring.

Claim 78 ~~90~~. The sprinkler of Claim 77 ~~89~~ wherein said cam lobe is on said carrier and said L-shaped leaf spring biased is mounted on adjacent housing structure.

Claim 79 ~~91~~. The sprinkler of Claim 78 ~~88~~ wherein said cam lobe is on said carrier and said spring biased follower means is mounted on adjacent housing structure.

Claim 80 ~~92~~. The sprinkler of Claim 76 ~~88~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

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Claim ~~93~~ 91. The sprinkler of Claim ~~92~~ 90 wherein:

reversible gear train comprises a drive gear driven by said drive motor and mounted for rotation about a second axis spaced from said first axis;

said carrier is mounted for pivotal movement about said second axis; and

said shifting arm means is mounted for pivotal movement about said first axis.

Claim ~~94~~ 92. The sprinkler unit of Claim ~~93~~ 91 wherein:

said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through said lost motion means comprising shoulder means on the opposite side of said first axis from said second axis.

Claim ~~95~~ 93. The sprinkler of Claim ~~87~~ 75 wherein:

said reversible gear train comprises a drive gear driven by said drive motor and mounted for rotation about a second axis spaced from said first axis;

said carrier is mounted for pivotal movement about said second axis; and

said shifting arm means is mounted for pivotal movement about said first axis.

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Claim ~~96~~. The sprinkler unit of Claim ~~87~~ wherein: said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through said lost motion means comprising shoulder means on the opposite side of said first axis from said second axis.

Claim ~~97~~. The sprinkler of Claim ~~96~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

Claim ~~98~~. An oscillating sprinkler unit, comprising: a housing having a generally cylindrical configuration with a central axis, an inlet at a lower end for attachment to a source of water and an outlet at an upper end;

a sprinkler head mounted at said upper end for rotation about said central axis;

a drive motor mounted in said housing for driving said sprinkler head;

a shiftable gear train comprising terminal drive gear means including an internal gear connected to said sprinkler head, shiftable means for alternatively shifting said terminal drive gear means alternatively

into engagement with said internal gear for driving said sprinkler head in alternate directions;

said shiftable drive means comprising a drive shaft driven by said drive motor and operatively connected to a drive gear mounted for rotation about a second axis offset from said first axis;

a pivoting carrier mounted for pivotal movement about said second axis;

one of said terminal gear means mounted on said carrier on one side of said second axis, and the other of said drive gears mounted on said carrier on the other side of said second axis;

a shifting arm mounted adjacent said carrier for pivotal movement about said first axis;

lost motion means disposed between said shifting arm and said carrier for connecting said shifting arm to said carrier for shifting said terminal drive gear means to alternately engageable positions;

first over-center biasing means for maintaining said shifting arm means in a selected one of said alternately shifting positions; and

over-center cam means on said carrier slideably engageable by adjacent spring biased follower means for biasing and maintaining said carrier in a selected one of said alternate engageable positions.

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Claim ~~99~~. A sprinkler unit according to Claim ~~98~~ wherein:

said over-center cam means comprises a dual faced cam and said follower means comprises a generally L-shaped spring disposed between said carrier and said housing for biasing said shifting arm to said one of said alternately shifting positions.

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Claim ~~100~~. The sprinkler of Claim ~~99~~ wherein said dual faced cam is on said carrier and said spring is mounted on adjacent housing structure.

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Claim ~~101~~. The sprinkler of Claim ~~100~~ wherein said cam has a lobe that is of a substantially symmetrical V-shape; and

said spring comprises a generally L-shaped leaf spring.

REMARKS

U. S. Patent No. 4,948,052, issued August 14, 1990, recently came to the attention of applicant and it was seen that Claim 1-26 thereof could be made in subject application. Claims 1 through 26 of U. S. Patent No. 4,948,052 are presented herewith as new Claims 76 through 101 for the purpose of having an INTERFERENCE